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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,043	02/14/2002	Gregory M. Chrysler	2207/12666	7585

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EXAMINER	
LAVILLA, MICHAEL E	

ART UNIT	PAPER NUMBER
1775	

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,043	CHRYSLER ET AL.	
	Examiner	Art Unit	
	Michael La Villa	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *PTO-948 20030627*.

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Applicant's Specification does not appear to use the claim terminology "the covering layer having a thickness just enough to cover a roughness of the free surface of the diamond layer such that the thermal coupling surface of the covering layer is substantially flat" of Claim 18 or the analogous language of Claim 29.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

3. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 18-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. See the reasons of record in the Office Action mailed on 29 June 2004.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

6. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 18-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

   I. Regarding Claims 18 and 29, it is unclear what constitutes "just enough to cover". It is unclear how much material coverage is required to be "just enough".

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

9. A person shall be entitled to a patent unless –

10. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 18, 19, 25, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Hall et al. USPA 2002/0023733 for the reasons of record in the Office Action mailed on 29 June 2004.

13. Claims 18-21, 23, 24, 25, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Petkie USP 6,531,226 for the reasons of record in the Office Action mailed on 29 June 2004.

14. Claims 18-23, 25, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Thorpe et al. USP 5,804,321 for the reasons of record in the Office Action mailed on 29 June 2004.

15. Claims 18-21, 23, 24, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiomi et al. USP 5,976,909 for the reasons of record in the Office Action mailed on 29 June 2004.

16. Claims 18-21 and 23-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Chrysler et al. USPA 2002/0074649.

17. Claims 18-21 and 23-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Mahajan et al. USPA 2002/0105071 for the reasons of record in the Office Action mailed on 29 June 2004.

Drawings

18. In order to avoid abandonment, the drawing informalities noted in the paper mailed on 27 June 2003, must now be corrected. Correction can only be effected in the manner set forth in the above noted paper. A copy of this paper is attached to this Office Action.

Response to Amendment

I. In view of applicant's amendments and arguments, applicant traverses the section 112, first paragraph rejection of the Office Action mailed on 29 June 2004. Applicant argues that one of ordinary skill in the art would be able to control the deposition process in order to meet the "just enough" claim limitation. Consequently, the absence of recitation

of these steps in the Specification does not render the claimed invention non-enabled. In support of applicant's contentions, applicant suggests a sequence of steps, to achieve the claimed invention, that would have been apparent to one of ordinary skill in the art at the time of the invention. Notwithstanding the difficulties of claim definiteness, it is unclear how the proposed sequence of steps would lead to the claimed invention. While any deposited CVD diamond layer may comprise average properties that are comparable to others similarly prepared, each layer would be expected to possess a different profile of unpolished surface roughness. Hence, it is unclear how the information of average properties would lead one of ordinary skill in the art to know what the actual profile for a particular sample is. Coupling this uncertainty with the variation in surface profile to be expected by the polishing step of the covering layer, it is unclear how much covering layer material is required and how much polishing is required. It is unclear what determines whether the "just enough" relationship is achieved. Mere volumes of needed covering material as determined by the diamond surface profile and polishing characteristics do not lead to "just enough," unless this is what is meant by "just enough." If so, presentation as a product-by-process claim may be effective. For example, suppose the diamond profile were known. An amount of covering layer is applied. Some polishing is required to obtain the "just

enough" requirement. Suppose there are several peaks on the diamond surface of comparable height. The polishing is performed. In some regions, where there is a diamond peak, there is perfect grazing but in others the polished surface is higher than the peak, failing to meet the grazing relationship. It is unclear how the proposed process leads to "just enough" relationship. Were applicant correct that computer simulation could achieve this required structure, it is unclear how a computer simulation can guarantee that the outer surface of the covering layer is not penetrated by diamond peaks and yet not be any higher than any diamond peaks.

II. In view of applicant's amendments and arguments, applicant traverses the section 112, second paragraph rejection of the Office Action mailed on 29 June 2004. Except as repeated above, the rejections are withdrawn. Applicant argues that the Examiner had previously considered the rejected language to be definite. It is remarked that applicant has previously referred to Figure 3 to explain the meaning of this language. Applicant points out that a "substantially flat" surface may have quantifiable surface roughness. In view of the apparent possibility that the coupling surface may possess its own intrinsic roughness it is unclear what it means for the covering layer to have a "just enough" thickness. It is unclear what determines whether a spike or depression in the thermal coupling surface with respect to a peak in

the underlying diamond layer is too much to be encompassed by the required "just enough" relationship.

III. In view of applicant's amendments and arguments, applicant traverses the section 102 rejection over Hall of the Office Action mailed on 29 June 2004. Applicant argues that Hall's layer is not CVD and hence cannot possess the required structure. Applicant's claims do not demand diamond of any particular or typical structure, and so the argument is not persuasive.

IV. In view of applicant's amendments and arguments, applicant traverses the section 102 rejection over Petkie of the Office Action mailed on 29 June 2004. Applicant argues that Petkie's layer is CVD with polishing, contrary to the claimed unpolished surface. Applicant's unpolished diamond is not necessarily different from that of Petkie in view of the absence of parameters that would necessarily result in diamond that does not encompass that of Petkie.

V. In view of applicant's amendments and arguments, applicant traverses the section 102 rejection over Thorpe of the Office Action mailed on 29 June 2004. Applicant argues that Thorpe does not teach a heat spreader and does not teach CVD diamond that is unpolished. Applicant argues that Hall's layer is not CVD and hence cannot possess the required structure. Applicant's claims do not demand

diamond of any particular or typical structure, and so the argument is not persuasive.

VI. In view of applicant's amendments and arguments, applicant traverses the section 102 rejection over Shiomi, over Chrysler, and over Mahajan of the Office Action mailed on 29 June 2004. Applicant traverses on the grounds that the claims are definite and enabled and do not encompass the structures of these references. Since, as broadly interpreted, applicant's claims can be said to encompass the structures of these references, the rejections are maintained. The broadly claimed requirements of surface roughness and flatness are inherently satisfied.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

20. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael La Villa whose telephone number is (571) 272-1539. The examiner can normally be reached on Monday through Friday.

22. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

23. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael La Villa
19 September 2005